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ited and finally more or less confluent. The leaf is marked above with yellowish blotches, which finally become dark brown. Conidia *oblong*, pale tobacco-brown, nucleate becoming 1-septate, 20–35 by 5–6μ. The mode of growth is like that of *C. clavata*, Ger. Both this and *C. ageratoides*, E. & E., differ from *C. eupatorii*, Pk., which is on definite spots.

CERCOSPORA SIDÆCOLA, *n. s.* On living leaves of *Sida spinosa* St. Martinville, La., December, 1888. Rev. A. B. Langlois, No. 1555. Forming smoky black indefinitely effused velutinous patches on the under side of the leaf, the upper side remaining green or only slightly discolored. Hyphæ scarcely tufted, simple, multiseptate, reddish-brown (under the microscope), repeatedly shouldered above, slender, 150–225 by about 4μ. Conidia slender, obclavate, hyaline, granular and nucleate, becoming faintly 5–7-septate, 70–100 by 4–5μ.

CERCOSPORA FUSCO-VIRENS, Sacc. Prof. S. M. Tracy finds this at Madison, Miss., on *Passiflora incarnata* with hyphæ 40–50 by 4–5μ. Conidia 80–120 by 3–4μ. Are the measurements in Sylloge transposed? It would appear so from these specimens, which agree otherwise with Saccardo's description.

SPORIDESMIUM INSULARE, *n. s.* On bark of living oak. Flatbush, L. I., N. Y., December, 1888. Rev. J. L. Zabriskie, 52. Forming small, black, scattered patches, about as large as a pin head, or more or less confluent, bursting through the sterile, granular thallus of some lichen. Conidia arising from slender, subhyaline inconspicuous creeping threads, at first globose, and as in *S. sarcinula*, B. & C., marked by two septa at right angles, soon enlarged by the addition of a margin of peripheric cells and becoming 12–15μ in diameter; when growing beyond this size they usually become oblong 25–40 by 15–20μ, more or less irregular in shape. The component cells are about 3μ in diameter. We have not seen *S. epicoccoides*, B. & C., from which possibly this is not distinct. The conidia under the microscope remind one of *Cheirospora botryospora*, Fr.

DENDRODOCHIUM NIGRESCENS, *n. s.* On bark of *Acer negundo*. Sand Coulee, Cascade County, Mont., November, 1888. F. W. Anderson. Sporodochia erumpent, about 1^{mm} across, flesh color, becoming nearly black. Basidia dichotomously or subverticillately branched, mostly curved. Conidia oblong, hyaline, 5–7 by 1½–2μ.

NEW SPECIES OF FUNGI.

By W. A. KELLERMAN and W. T. SWINGLE.

SACIDIUM ULMI-GALLÆ, *n. s.* Spots none; pseudo-perithecia occupying indefinite blackened portions of the outside of the gall, rather few, subgregarious, indistinctly limited, black or dusky black, oval, elliptical or irregularly linear, ½–2 by ¼–½^{mm}, at first irregularly inflated, then depressed and corrugated, very early splitting nearly the whole length and finally exposing nearly the whole hymeneal layer by the free edges approaching the sides in a compact roll; formed from the blackened and slightly changed cuticle of the host; on the upper surface granulate, below irregularly tuberculate, not distinctly cellular; basidia hyaline, clavate, cylindrical or somewhat irregular, continuous or sometimes apparently sparingly septate, very numerous, densely crowded, 15–25 by 2–4μ; sporules hyaline, ovate, clavate, cylindrical or sometimes oblong or oval, attached by the smaller end, bluntly rounded at both ends, often slightly inequilateral, 7½–11 by 3–5μ, mostly 8–10 by 3½–4½μ, wall very thin, smooth, contents minutely many-guttulate, especially at the ends. On galls caused by some species of *Phytoptus* on the upper side of the leaves of *Ulmus Americana*, Manhattan, Kans., May and June, 1889. (No. 1493.) The basidia of this species are formed between the epidermal cells and the cuticle in almost exactly the same way as in some species of *Taphrina.* The mycelium is formed, chiefly between the cells, for a considerable distance from the perithecia. It is hyaline, many septate, rather coarse, and often much twisted and contorted. This species differs from most of the *Sacidii* in having, apparently, no true perithecium. However, the related genus *Leptothyrum* has such species.

The galls which it attacks are not those caused by *Phytoptus ulmi.* They are much larger and differ in shape from the galls caused by that species. They are "nail galls" about 5–10 by 2–4^{mm}, usually acute or subacute at the top and abruptly narrowed and nearly closed at the base The sides are usually more or less angled or ribbed; often several galls become attached to each other or spring from a common base without becoming attached above.

CYLINDROSPORIUM TRIOSTEI, *n. s.* Spots indefinite, amphigenous but more prominent above, yellowish green, at first small (½–2^{mm} in diameter), sometimes at length becoming confluent and from 2–5^{mm} in diameter. Usually sparse, scattered irregularly all over the leaf; acervuli, amphigenous, but often larger and more numerous below, sparse, at first subepidermal then erumpent, about 150–300μ in diameter, pale yellowish white; hyphae pallid, abundant, rather irregularly and sparingly branched, variable in diameter, often larger above, about 15–30 by 3–5μ, arising from a dense pseudo-parenchymatous mass of hyphae which at first issue through the stomata but soon force themselves through the epidermis all around finally pushing it away; conidia terminal on the hyphae or branches, subpersistent, abundant, in mass of a pale cream color, when seen singly subhyaline, elongate-fusoid, very strongly and regularly curved or rarely only slightly curved, ends rather obtuse or sometimes acute, the free end being the most acute, 3–7 (mostly 4–6) septate, not constricted at septa, rather regular in size, 35–67 by 4–6μ, mostly 45–57 by 4–5μ. Very rare on leaves of *Triosteum perfoliatum.* Manhattan, Kans., August 24, 1887. This species seems to be extremely rare, a few specimens were seen and conidia sketched in 1886 but none were collected in any quantity till the following year. It is more abundant on the lower leaves but occurs also on the upper ones. The mycelium is very abundant, hyaline, somewhat branched and sparingly septate, about 2½–3½μ in diameter. The conidia are often curved so as to form a semicircle and sometimes even still more curved; sometimes one end is more curved than the other. Owing to this fact of the conidia, and especially the longer ones, being so much curved they are in reality much longer than is shown by the measurements given.

CERCOSPORA AQUILEGIÆ, *n. s.* Spots distinct, about equally prominent on both sides of the leaflets, purplish brown, paler below, rather numerous, scattered over the leaf or sometimes confluent, variable in size, about 3–15^{mm} long and 1½–5^{mm} wide, usually irregularly linear or oblong but sometimes nearly square when young, angular, often acutely pointed, limited by the veinlets; hyphæ sparsely scattered, dusky, simple, usually several septate, not at all or only slightly constricted at septa, tapering scarcely if at all or sometimes even slightly larger above, below nearly straight but towards the tip usually several times strongly geniculate and dentate, occasionally bent nearly at right angles, rather long, 50–145 by 4–6½μ, mostly 80–110 by 5–6μ, often growing in small tufts which are composed of 2–6 loosely diverging hyphæ, and are scarcely noticeable except in section; conidia scarce, hyaline, more or less curved, flagellate, attached by the larger blunt end, the free end being very slender and acutely pointed, rather indistinctly multiseptate, scarcely or not at all constricted at septa, variable, often very long, 140–310μ long, 4½–6μ in diameter at the base, and 1½–3μ in diameter at the apex, mostly 150–250μ long, 5–6μ in diameter below, and 2–2½μ in diameter above. On radical leaves of *Aquilegia Canadensis*, Manhattan, Kans., June 21, 1889. (No. 1495.) This species is really distinguished from any published species occurring on *Ranunculaceæ* by its strongly bent hyphæ and very long conidia. The mycelium is sparse, hyaline, sparingly branched, sometimes guttate, 2–3μ in diameter. The conidia are sometimes rather variable in diameter towards the base, one or more of the segments being more slender than the adjoining ones.

CERCOSPORA GERANII, *n. s.* Spots visible on both sides of the leaf, brownish or dusky, oval or oblong or sometimes sublinear, often marginal or terminal sometimes limited by prominent veins, very often surrounded by a pale, but rather clear red coloration which is more prominent on the upper surface of the leaf and often involves more or less of the whole segment of the leaf especially the part beyond the spot and on the same side of the midvein, 2–8 by 1½–4^{mm} mostly 3–7 by 2–3^{mm}; tufts amphigenous, but rather more abundant above, thickly and evenly scattered over the whole spot, rather small, deep seated, usually arising through stomata, composed of from 5–15 or even 20–30 hyphæ, which are densely packed below the surface, but considerably divergent above; hyphæ short and stout, dusky or brownish, 25–50μ long, 3–4μ in diameter at base and 3–3½μ in diameter at apex, mostly about 30–40μ long, simple, sparingly septate at base, often somewhat bent at the tip and showing several closely proximate scars where conidia were attached; conidia abundant, persistent, hyaline, straight or slightly curved, cylindrical or, when very long, clavate, acute at both ends, attached by the larger end (?), plainly 1–5, mostly 3–4, septate, not constricted at septa, quite variable in size, and especially in width, 36–98μ long, 1¾–3μ in diameter at base and 1¼–3μ in diameter at apex, mostly 48–85μ long, 2¼–3μ in diameter at base and 1½–3μ in diameter at apex. On languishing lower leaves of *Geranium Carolinianum*, St. George, Pottawatomie County, May 30, 1887 (No. 898). The conidia in this species are remarkably abundant and persistent, and in good specimens may be seen attached to the hyphæ in such great numbers as to form a thin whitish coating over the spot. The tufts are quite variable in size and appear as minute black dots before the conidia are fully formed or after they have fallen. The mycelium is rather sparse, hyaline, rather regular in diameter (2½–3μ), but sparingly if at all septate.

CERCOSPORA GAURÆ, *n. s.* Spots amphigenous, definite, subolivaceous, surrounded by an indefinitely reddish coloration, suborbicular, oval, or rounded angular, about 5–10^{mm} in diameter, often limited by a vein on one side; tufts mostly epiphyllous but usually amphigenous, at first small, composed of few hyphæ, but becoming large (40–100μ in diameter), composed of hyphæ which are closely packed or slightly divergent; hyphæ short, simple, continuous, subfuscous, tapering slightly from the base, 15–30 by 2½–4μ, mostly 18–25 by 3–4μ; often dentate above, and sometimes bent or strongly dentate below; conidia of the same color as the hyphæ, slightly curved or straight, linear clavate, the larger attached ends subacute truncate, the free ends somewhat acute, when young nucleate, when mature 3–7 septate, 40–108 by 2–4μ, mostly 56–90 by 1½–3μ. On leaves of *Gaura biennis*, Columbus, Kans., July 12, 1887 (No. 1491). The nuclei in the young conidia appear to be in pairs on either side of the places where septa will appear.

CERCOSPORA LOBELIÆ, *n. s.* Spots visible on both sides of the leaf but more prominent above, light grayish or pallid dirty yellowish, at first minute, suborbicular then larger, 3–8^{mm} in diameter, oval or suborbicular, often subangular and sometimes irregular, surrounded by an indefinite dull purplish coloration, which is more pronounced around the smaller spots. Tufts scattered amphigenous but often more abundant below, composed of 10–20 or more laxly diverging hyphæ arising from an elevated polycellular, tubercular base; hyphæ clear fuligenous brown, less colored above, 50–135μ long; 5–7μ in diameter at base, and 2½–5μ in diameter at apex, mostly about 95–130μ long; 5–7μ in diameter at base, and 3½–4½μ in diameter at apex, above subgeniculate and showing at considerable intervals the old scars where conidia were attached, faintly several septate, not constricted at septa; conidia rather sparse, hyaline, curved or more rarely straight, clavate or flagellate attached by the truncate base and above attenuate to a subacute point, somewhat faintly multiseptate, not constricted at septa, variable in size, 55–175μ long, 3–4½μ in diameter at base and 1–3μ in diameter at apex, mostly about 90–165μ long; 3–4μ in diameter at base, and 1½–2μ in diameter at apex. On leaves of *Lobelia syphilitica.* St. George, Pottawatomie County, Kans., September 29, 1888 (No. 1492). The mycelium of this species is rather abundant, hyaline, guttate, about 2–4μ in diameter, but often alternately inflated and contracted, sparingly branched and septate, but near the tubercular bases it becomes many septate, thick, and slightly colored. These bases when young are seen to be composed of the enlarged many-septate bases of the hyphæ, but when fully grown appear as a somewhat irregular mass of rather large cells. A few conidia were seen which had commenced to germinate.

This species is very different from *Cercospora effusa*, (B. & C.) E. & E., which sometimes occurs on the same leaves. It also seems distinct from *Cercospora ochracea*, Sacc. & Malbr., from which it differs, according to the description in Sacc. Syll., Vol. III, p. 447, No. 2151, in the character of the spots, the size of hyphæ and conidia, and color of conidia. Besides, that species occurs on *Lobelia urens* in Europe.

CERCOSPORA EUPHORBIÆ, *n. s.* Spots indefinite, merging gradually into the healthy leaf, dusky or sometimes almost black, but lighter (commonly cinereous dusky) in the center, occupying any portion or sometimes all of the leaf, suborbicular, ½–2^{cm} in diameter, commonly about 1^{cm}; tufts amphigenous but more abundant below, small, scarcely noticeable except in section, rather thickly scattered over the whole discolored area, but more abundant in the central portion, composed of from 3–15 (mostly 5–12) loosely diverging hyphæ which generally arise through stomata, though they have but a very short subepidermal portion; hyphæ dusky or brownish, cylindrical, tapering scarcely if at all, apparently having a round hole in the top, stout, simple, 60–120 by 4–7μ, mostly 75–110 by 5–6μ, sparingly septate, usually not constricted at septa, but sometimes very much so above, often sparingly subgeniculate or dentate from about the middle, usually showing but few marks of attachment of conidia; conidia rather abundant, hyaline, very stout and thick, clavate or cylindrical, straight or slightly curved, attached by the larger blunt end, free and somewhat acute, plainly 8–15-septate, not constricted at septa, usually somewhat granular within, very variable in size, 28–166μ long, 3–6μ in diameter at base and 1–5μ in diameter at apex, mostly 50–120 long, 4–5μ in diameter at base and 3–4μ in diameter at apex. On leaves of *Euphorbia corollata.* St. George, Pottawatomie County, Kans., August 13, 1888. (No. 1494.) This species is rather rare, but is usually abundant on such host plants as are attacked. It does not seem to have much preference for upper or lower leaves, but attacks any. The mycelium is hyaline, sparse, sparingly branched, and septate (?), guttate, rather regular in size, 2–4μ in diameter. The conidia are multiseptate even when small.

CERCOSPORA JUGLANDIS, *n. s.* Spots visible on both sides of the leaf, but more prominent above, brown, very small, ⅕–1$^{\mathrm{mm}}$ in diameter, angular, limited by the veinlets and often occupying only a single one of the minute spaces inclosed by the veinlets, often by confluence forming large angular, brown or cinereous brown areas ½–2$^{\mathrm{cm}}$ in diameter, in which the original spots may be recognized by their now darker color, usually very numerous, scattered all over the leaf; tufts hypophyllous, prominent, so numerous as to appear confluent over much of the spot except in section, rather large, composed of about 10–30 or more hyphæ which arise through stomata and are densely packed for a short distance below the surface, but are somewhat divergent above; hyphæ slightly dusky, simple, continuous or rarely 1 or 2 septate, scarcely tapering, but often abruptly narrowed, then truncate-rounded at the tip, rather short, the portions above the surface of the leaf being 20–65 by 3–6μ, but mostly 30–45 by 3½–5μ, usually furnished with one or more prominent shoulders near the tip marking the places where conidia were attached, usually nearly straight, but sometimes bent—commonly at the base or near the tip; conidia abundant, evidently dusky, but not quite as deeply colored as the hyphæ, stout, subclavate or cylindrical, narrowed, then rather abruptly truncate at both ends, the basal segment usually somewhat wider than the others, 1–3-septate or rarely continuous, gradually, but evidently narrowed at septa—especially at the middle one, usually strongly curved (often principally at the middle septum), sometimes only slightly curved and rarely straight, variable in length, 33–72μ long, 4–5μ in diameter at basal segment, and 3–5μ in diameter at upper segment, mostly 40–70μ long, 4½–5μ in diameter below, and 3–4½μ in diameter above, wall evident, rather thick (½–1μ). On lower leaves of medium sized trees of *Juglans nigra.* Manhattan, Kans., August 19, 1887. (No. 1079.) This species is readily distinguished by the color, shape, and thick walls of its conidia. The portions of the hyphæ below the surface of the leaf are very short, straight, and perhaps narrower than the portions above. When septate the hyphæ are narrowed at the septa much as are the conidia. The mycelium is abundant, much branched and septate, and about 2½–4μ in diameter. The species was moderately abundant when found, and had evidently injured many of the leaflets attacked. It is very possible that it might do considerable damage if it attacked very young trees.

UREDO KANSENSIS, *n. s.* Spots amphigenous but more prominent above; rather sparse, definite or becoming subindefinite; at first greenish yellow with a nearly green center, at length becoming clear brown, very often marginal or running to the margin, subangular; roundish, or, when marginal, subtriangular. Sori hypophyllous or rarely also epiphyllous, very prominent, at first rather small, ¼–¾$^{\mathrm{mm}}$ in diameter, but soon by confluence becoming large (1–3$^{\mathrm{mm}}$ in diameter), annular, inclosing a small space occupied by spermogonia, appearing of a dull greenish color, surrounded by numerous, hyaline, clavate, incurved paraphyses, which are about 50–90μ long and 13–20μ in diameter at the top; spores at first obovate or oval, hyaline, when mature oval, subglobose, or sometimes pyriform or elliptical, slightly sordid, in mass appearing of a slightly dirty yellow color, usually slightly and sometimes strongly papillate; 17–35 by 15–22μ, mostly 26–31 by 19–21μ, very easily falling off the pedicels, which are rather obscure, hyaline, closely packed, persistent on the host, forming a dense layer about 30–50 by 3μ; spermogonia amphigenous, occupying the center of the spot, rather numerous, black or dark brown, superficial, depressed, papillate, apparently sterile, 75–100μ in diameter. On leaflets of *Amorpha fruticosa.* Rooks County, Kans. Summer, 1884 (No. 773). June 20, 1888 (Mr. E. Bartholomew, No. 223). Manhattan, Kans., June 21, 1887 (No. 905). June 20, 1889 (No. 1490). Ellis & Everhart, North American Fungi, No. 2255 a (but not b), sub. nom. *Puccinia amorphæ,* Curtis.

This species is very peculiar both in color and in possessing spermogonia. It is very distinct from the uredo stage of *Uropyxis amorphæ,* (Curt.) Schrœt. and appears earlier. The spores seem to originate at the bottom of the layer of pedicels and to be carried up by the growing pedicel. The mycelium is abundant, hyaline, branched and septate 2–3μ in diameter. The cells of the host, which are attacked, usually contain very numerous small (3–5μ) oval, or globose starch grains.

NOTES ON NEW OR RARE FUNGI FROM WESTERN NEW YORK.

By Charles E. Fairman.

The student of mycology in New York turns to the invaluable reports of Prof. C. H. Peck whenever he wishes to ascertain if a given species has been found within the limits of the State. The purpose of this article is to indicate certain species, which have been found in New York, but are not, so far as the author knows, listed in the reports of Professor Peck.

Didymium Fairmani, Sacc., *n. s.* Peridia scattered, sessile, flocose, hyaline, widely reticulate; spores smooth (8–10μ in diameter); thickly studded with crystals; columella subglobose, brownish. On leaves of *Smilacina bifolia.* August, 1886, Lyndonville, Orleans County, N. Y.

Coniosporium Fairmani, Sacc., *n. s.* Differs from the allied *C. apiosporiodes* by its much fewer conidia (5–7μ in diameter), globose, smooth, fulgineous, one nucleate. On cortex of Hubbard squash, exposed to the weather. The fungus covers the surface with black sooty patches. Lyndonville, N. Y., February 10, 1886.

Cytosporina ailanthi, Sacc., and what may be *Phoma ailanthi,* Sacc., occur on *Ailanthus glandulosus,* sparingly, in company with the more common *Camarosporium subfenestratum,* B. & C. *Cytisporium Neesii,* Cda., attacks birches used as ornamental trees.

shall remain lying about in the vineyard. Likewise in hewing must all resulting wood fragments be scrupulously gathered and immediately removed. All stocks once attacked by the disease must be pulled out and burned as soon as possible—all still existing roots, with the very utmost speed. Finally, moreover, care must be taken in the removal of vine stakes at the beginning of the winter that the points, sometimes broken off in this way, are not left in the ground. Were it in general practicable, from local or pecuniary reasons, to remove the vine palings entirely and substitute cultivation upon wires, then certainly one chief source of infection would be entirely removed. In conclusion, it may also be mentioned that where persons do not feel able to do without forest litter in the cattle stables and the use of the resulting manure in the vineyard, a frequent scattering of Stassfurt fertilizer or kainit in the stables and on the dung pile will result in good, as thereby, the beginning of this fungous mycelia will be hindered."

Three other underground parasites are considered—*Phasmodiophora*, *Dermatophthora necatrix*, and *Rosellina quercina;* but no mention is made of *Agaricus melleus* or of Hartig's *Trametes radiciperda*, which Brefeld now says (VII, p. 14) should unquestionably be referred to *Polyporus annosus*, Fr.—ERWIN F. SMITH.

DESCRIPTION OF PLATES.

PLATE IX (after von Tavel).

Glœsporium nervisequum.

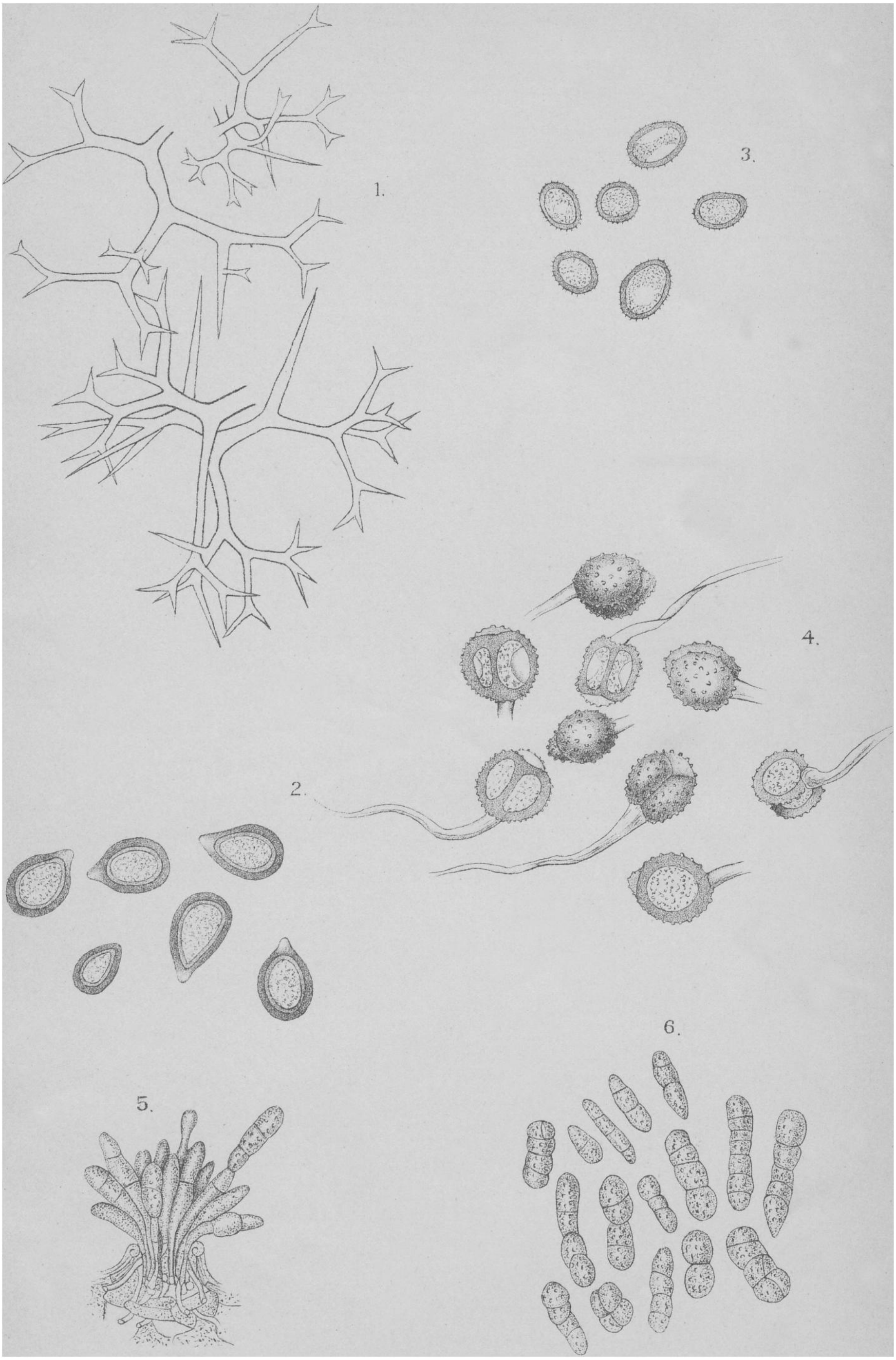
FIG. 1. Cross-section through a vein and pustule of the fungus; the basidia are only partially drawn. The abscision of spores has not yet begun. x 380.
2. Spores. x 380.

Fenestella platani.

3. Cross-section through a young stage. The representation of the host plant is diagrammatic. x 128.
4. More advanced stage. x 128.
5. Same mature. The spore mass is only indicated. x 80.

PLATE X.

FIG. 1. *Langloisula spinosa* mycelium. E. A. Southworth, del.
2. Spores. E. A. S., del.
3. *Diorchidium Tracyi*, uredospores. E. A. S., del.
4. Teleulespores. E. A. S., del.
5. *Septosporium heterosporum*, tuft of conidia. After E. A. S.
6. Spores. After E. A. S.



NEW SPECIES OF FUNGI.

A.Hoen & Co. Lith. Baltimore.